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EXAMINER	
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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 09/673,327
Filing Date: March 12, 2001
Appellant(s): KNEPPE ET AL.

Friedrich Kueffner
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed January 31, 2005.

(1) Real Party in Interest

A statement identifying the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

A statement identifying the related appeals and interferences which will directly affect or be directly affected by or have a bearing on the decision in the pending appeal is contained in the brief.

(3) Status of Claims

The statement of the status of the claims contained in the brief is correct.

(4) Status of Amendments After Final

No amendment after final has been filed.

(5) Summary of Invention

The summary of invention contained in the brief is correct.

(6) Issues

The appellant's statement of the issues in the brief is correct.

(7) Grouping of Claims

The rejection of claims 10 (independent) and 12 to 15 (dependent on Claim 10) stand or fall together because appellant's brief does not include a statement that this grouping of claims does not stand or fall together and reasons in support thereof. See 37 CFR 1.192(c)(7).

(8) Claims Appealed

The copy of the appealed claims contained in the Appendix to the brief is correct.

(9) Prior Art of Record

2,075,574	Dahlstrom	3-1937

3,822,081	Mercer et al.	7-1974
4,191,042	Salter, Jr.	3-1980

(10) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claims 10 and 12 to 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mercer et al. in view of Salter, Jr. and Dahlstrom.

Mercer et al. discloses a rolling mill roll having bearing means with an integrated hydraulic unit for effecting axial adjustment of the roll in the manner required by these claims. In particular, cylinder 30 in the mill housing consists of a groove divided into space portions 36, 38 by the ring 40 of piston 46. Via the hydraulic control system of the roll stand pressure is applied to opposite sides of ring 40 to effect axial adjustment of the bearing shell 18 and roll 22.

Bushing 14 provides a bearing surface 16 for axial adjustable roll bearing shell 18. Claim 10 requires this bearing to be a hydrodynamic oil film bearing. Mercer et al. does not specifically disclose use of an oil film bearing.

Salter, Jr. discloses an axially adjustable rolling mill roll bearing in which bushing 16 provides a bearing surface 14 for bearing sleeve 12, and advises that it is preferable to maintain an oil film at the surface 14 between the sleeve 12 and the bushing 16. See column 1, lines 37 to 41 and column 2, lines 37 to 40. Such a bearing is a hydrodynamic oil film bearing such as that of the invention

It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide an oil film bearing at sleeve 18 and bushing 14 of Mercer et al., following the suggestion of Salter, Jr. that such bearings are preferable for use with axial adjustable rolling mill rolls, in order to reduce the frictional resistance as much as possible during axial roll adjustment.

Claim 10 further requires the presence of an axial position indicator connected to the free end of the roll neck. Mercer et al. discloses axial position indicator 84 connected to bearing element 54.

Dahlstrom discloses a rolling mill arrangement in which the axial position of working rolls is determined by sensing the actual position of the free end of the roll necks. See Figure 8. It would have been further obvious to one skilled in the art to locate the Mercer et al. axial position indicator 84 in direct contact with the free end of the roll neck 26, following the suggestion of Dahlstrom, in order to avoid measurement errors which might arise from machine tolerances or play present in the construction of the roll bearing assembly. Dahlstrom is considered to suggest to one skilled in the art that it is desirable to detect the axial position of working rolls by instrumentation located directly at the ends of the roll rather than measuring the position of another element associated with the roll, such as the supporting bearings. Following such suggestion, one skilled in the art would be motivated to locate the axial measurement indicator 84 of Mercer et al. in direct contact with the free end of the roll rather than in contact with the bearing element 54 as seen the Mercer et al. drawing.

The Mercer et al. axial position indicator is used for control of the axial adjustment, as recited in dependent Claim 12, and includes a connecting rod in contact with the measured machine element, as recited in dependent Claim 15. Dependent Claims 13 and 14 merely recite intended uses of the bearing assembly, and add no additional structural limitations to Claim 10.

(11) Response to Argument

Applicant does not traverse the combination of teachings from Mercer et al. and Salter, Jr. regarding the use of hydrodynamic oil film bearings as set forth in the grounds of rejection. However, it is argued that the teachings of Dahlstrom are not appropriate in combination with Mercer et al. and Salter, Jr. because in Dahlstrom the rolls are adjusted in a plane parallel to the rolls direction rather than axially as in Mercer et al. and Salter, Jr. On page 9 of the appeal brief it is stated that the roll axes in Dahlstrom "are **not** axially moved". On page 10 of the appeal brief Applicant offers a description of the operation of the Dahlstrom controls illustrated in Figure 8 in which it is proposed that diagonally opposed contacts 33, 34 are bridged by skewing of the rolls in a plane parallel to the rolling direction, and the screws 29 of figure 7 are actuated responsive to such bridging to return the rolls to proper orientation orthogonal to the rolling direction.

This analysis of the Dahlstrom operation is erroneous. On page 1, column 1, lines 12 to 42 of Dahlstrom it is explained that deviation of a roll axis from right angles to the rolling direction produces forces tending to move the roll endwise, i.e., axially. On page 3 of Dahlstrom, column 1, line 25 and following, the operation of the arrangement

schematically shown in Figure 8 is explained. In particular, skewing of the rolls which causes endwise or axial movement of the rolls to the left in Figure 8 produces bridging of the contacts 33 and initiates appropriate adjustments by the mechanism of Figure 7. See column 1, lines 66 to 74. Conversely, skewing which produces forces causing the roll to move axially to the right results in bridging of contacts 34 and appropriate actuation of the adjustment mechanism. See column 2, lines 23 to 31. Thus, although the adjustments in Dahlstrom are made in a plane parallel to direction of rolling, it is the axial movement of the rolls which is detected to initiate the adjustment. See column 2, lines 43 to 51. There is no disclosure whatever in Dahlstrom of operation in the manner proposed by Applicant in the brief, as was specifically pointed out by the examiner in the final rejection in this application (paper mailed 10/08/2004).

Dahlstrom is thus seen to detect axial movement of a roll by instrumentation 32, 33, 34 located directly in contact with the free end of the roll neck. It would be self-evident to one skilled in the art that axial position detection in such a manner would eliminate errors which might arise, due to machine tolerances or play, when detecting axial position by measuring components associated with the roll assembly, such as bearing housings. It is also noted that Applicant has no disclosure of particular reasons for locating the axial position indicator in such a manner in the case of the invention.

One skilled in the art, following such teaching found in Dahlstrom, would be motivated to locate the position detection instrument 84 of Mercer et al. in contact with the free end of the roll, rather than in contact with bearing element 54, in order to obtain

more precise measurements of the actual axial position of the roll, as set forth in the grounds of rejection.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

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LAL
March 3, 2005

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